

DESIGNING WBE COURSEWARE: AN EXPERIENCE WITH LANGUAGE EXERCISES

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Abstract— *This paper presents an educational experience related to the design and implementation of grammar courseware to be used over the Internet (WBE - Web Based Education). It discusses how important it is to consider Grice's Cooperative Principle (CP) both in the specific subject presentation and in the selection of technology. Although CP has been conceived as a principle that guides spoken dialogue, its maxims can be extended in order to orient the elaboration of cooperative teaching material. Maxims as quantity, quality, relation and manner must be taken into account by the teacher and the ICT professional if they intend to design exercises that are in accordance with the students' specific learning necessities.*

Index Terms Courseware, Grice's Cooperative Principle, Language, Web based education .

INTRODUCTION

ICT is a powerful tool in supporting learning activities. Courseware developed using it allows interactivity, visualization, the use of sounds and animation, besides being suitable to be distributed over computer networks.

Web Based Education is one of the possibilities of education supported by ICT and inherits all the characteristics of the WWW environment. They range from a huge capilarity to a large and always increasing set of products to develop and use courseware.

Although technology is available to be used by all, the development of courseware must be centered on the specific needs set by the area of knowledge, the type of students, the educational purpose and the infrastructure that the students and faculty can count on [1].

This paper presents an educational experience related to the design and implementation of grammar courseware to be used over the Internet (WBE - Web Based Education). It discusses how important it is to consider Grice's Cooperative Principle (CP) both in the specific subject presentation and in the selection of technology. Although CP has been conceived as a principle that guides spoken dialogue, its maxims can be extended in order to orient the elaboration of cooperative teaching material. Maxims as quantity, quality, relation and manner must be taken into account by the teacher and the ICT professional if they intend to design exercises that are in accordance with the students' specific learning necessities.

This paper also shows that, as in the human dialog, feedback of interlocutor (in this case, the student) is extremely important for adjustments on the material already created and on that to be created. In a following section, the focus is on the information interchange between the teacher and the ICT professional.

The final part of the paper address technological aspects. It presents the many possibilities of implementation - animations, interactive exercises, hypertext, plain text, etc. The criteria to choose which combination to use is discussed in terms of the needs of the contents, of the technological characteristics of the environment of the students (mainly speed of network connections) and of the skill of the development team.

Examples of the implementation in the teaching of the Portuguese language in undergraduate courses of PUC-Rio, served from the Maxwell System (<http://www.maxwell.lambda.ele.puc-rio.br/>), are presented and analyzed. The Appendix shows 3 examples.

GRICE'S COOPERATIVE PRINCIPLE

According to Grice [2], dialogues are the result of a cooperative effort of the participants in order to reach the specific communicative goals. The author identified four conventions, which he calls maxims, governing conversations:

1. Quantity: make your contributions as informative as is required, but not more informative than is required.
2. Quality: try to make your contribution one that is truthful. That is, do not say anything you believe to be false.
3. Relation: make your contributions to the aims of ongoing conversation.
4. Manner: be clear, try to avoid obscurity, ambiguity, wordiness, and disorderliness in your use of language.

Considering that the sort of material and the technology used in Web Based Education must have a cooperative nature in order to effectively achieve its goals, it is possible to apply Grice's maxims to define aspects related to subject presentation and to select appropriate technological tools.

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QUANTITY

To follow the quantity maxim when designing WBE courseware, it is necessary to previously determine i) the specific learning necessities of the student who will attend the course and ii) the technological characteristics of the environment, specially speed of network connections. This will help us define the type and quantity of contents that will be offered as well the type of software tools that will be used in the design and implementation of the material.

It is important for the courseware to provide flexibility in terms of the number of exercises of each content. The student performance will drive the quantity of exercises. There must be a type of dynamic mechanism online to recommend complementary exercises about the same subject or, if it is the case, about any previous subject relevant to the understanding of the topic under discussion. This facility would provide a way to handle individual different backgrounds.

Assuming that any course in the Web has a potential plurifunctional use, it would also be interesting to make extra information about the topics available in a hypertext format. Thus, the material would attend not only its target users interests, but also satisfy people with different objectives.

QUALITY

Quality is about the reliability of information. The students must rely on the material they are accessing. The bibliographic references of the work, the theoretic framework assumed by the teacher, the methodology used in the elaboration of the material must be presented since the beginning, so that the learner is confident on the accuracy of the information.

Furthermore, it is important that the users know what they are supposed to achieve in each specific content. This will give the students an opportunity to track their learning process and the efficiency of the material. The students must be sure that the tool is able to offer an accurate and precise verification of the answers to the exercises. The mix of DHTML (Dynamic HTML) and Javascript is powerful enough to provide fast and error-free checks for online exercises, analyzing with accuracy the answers provided by the student and afterwards showing him or her the correct answers and comments made by the teacher or tutor.

The comments on the exercises should not be limited to sentences like "Congratulations. Right answer" or "'Wrong answer. Try once more". The ideal is that the teacher gives supplementary information about the topic or help the student to reanalyze the question. Of course, preparing a material with these characteristics requires extra effort, but the results will be more effective. It is also desirable that the courseware has a tool sensitive to mistakes patterns in order to direct the student to exercises that can improve his/her performance.

RELATION

Relation is about the relevance of the information. According to Grice, a contribution must properly meet the immediate necessities of each stage of the interaction. For example, in a grammar course, when a topic is introduced (e.g. uses and values of verb tenses), it is not recommended overloading students with examples that involve knowledge that will be addressed later (e.g. sentences in which a verb tense is used with specific discursive purposes). This information is surely important and relevant, but not at that moment.

Of course this demands that teacher carefully plans the contents presentation sequence. It is critical for the success of the course that the relations between the contents are transparent to the learner. A system of links can be used to indicate which previous information is necessary to do understand a specific topic and also the relevance of the current subject to other topics.

MANNER

Grice understands by manner not what is said, but how what is said is said. In the construction of the material to be used over the Internet, one must have in mind that the best format is the one that the user will not have a compulsion to print. This means that the material should not be similar to a book which presents information page to page. The courseware should be designed to engage the student in the learning process, being interactive, non-linear, with effective multimedia applications and automatic checking mechanisms for the exercises.

The use of the Macromedia Flash makes it possible to develop interactive content for Web applications based on the objectives of language teaching. Flash allows movies to be developed focused on theory demonstration or even graphically complex exercises. The possibilities of creating multimedia applications with this technology are endless, ranging from static movies to fully interactive movies that combine sounds and images to establish a real time online multimedia experience, captivating the student's attention while remaining faithful to the purpose of teaching.

In the presentation of the contents, it is important not to overload the screen with lots of images, animations, etc. The texts must be short and objective. The hypertexts must not have many internal windows in order the student not deviate from the main topic [3].

DEVELOPMENT CONSIDERATIONS

The first important topic that arises when discussing the development of Web contents based on a teacher's idea of an exercise or another type of instructing material is what are the possibilities that Web technology can offer so that

the online material really fulfils the teacher's needs and desires.

Well, not only today's technology can meet up with those needs, but it can easily excel them, making it possible to create more complex materials than it is thought at first sight. For that to happen a strong interaction between teacher and ICT group is needed, so that a team work may be established and the teacher's ideas expanded to fit the Web's large and ever growing horizon of possibilities. Together they can minimize programming cost, optimize time and find interesting solutions to subject presentation.

Another crucial issue is the analysis of the Internet connection capabilities of the future users of the material being developed. Sometimes, the most graphically stunning solution for a developing problem may not be the best one, since complex graphics, as well as sounds, require more powerful computers and faster Internet connections. Web users in general are a non-homogeneous group in regard to the speed of their internet access and the configuration of their computers. So, from time to time, a choice must be made between beauty and usefulness when developing Web exercises and content. Nevertheless, there are special techniques that reduce loading time, which provide help to special cases where heavy animation graphics and sounds are really important.

Also, a reasonable degree of flexibility by the teacher is desired, so that he or she can make small changes to his/her paper material and ideas in order to make a smoother and better transition to the Web, without compromising his original intent. In the particular case of online exercises this is specially true, since a greater degree of interaction is required. For this reason CGI scripts can be used to create log files with student's performance that can be emailed through a online server to the teacher or institution responsible for the teaching program. These can be used to provide the teachers with a database regarding how their pupils are faring through the online exercises, to allow a feedback by the instructor to specific students regarding particular answers or topics, or even to create online exams.

CURRENT STATUS

It is important to previously expose all the material to a test group, which will point out possible problems with both the subject presentation and user interface.

The material already produced has been in use by undergraduate students for 2 semesters. Approximately fifty students were exposed to the developed material so far, and their suggestions and contributions were already incorporated in the design process, altering both content and format of the Web exercises.

At the moment, exercises are being created focusing on the integration of specific grammar content with the development of linguistic and discursive abilities necessary to the production and comprehension of different types of texts.

NEXT STEPS

The future of this project encompasses an enhanced student-computer-teacher interface, which will allow a superior auto-learning mechanism to be implemented. That will be accomplished by a stronger use of server-based applications creating a fully functional database of analysis of the student's performance through the online material and providing the teacher with a better way to follow and judge their progress.

The evolution of ICT tools allows courseware written in Macromedia Director to communicate with IBM DB2. The ICT group has already implemented such applications that will be used in this project too.

There are plans to expand the access of this material to other groups, allowing students outside the language course to expose themselves to learning and improving their discursive and linguistics abilities, which are of primordial importance in today's world, for all professions.

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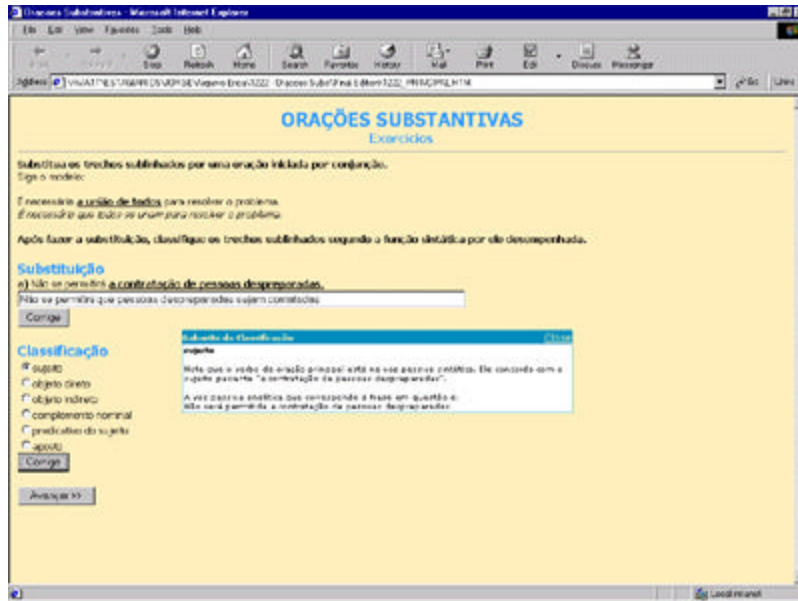


FIGURE. 3
EXERCISE AND CORRECTION ON THE SAME SCREEN

Another possible layout for an exercise is to provide the questions and answers on the same page. This is made possible by the intelligent use of DHTML layers, so that answers are hidden until the student finishes the exercise and clicks on the correction button. In the particular case of Figure 3, the student must first write an answer for the first part of the exercise on a text box and then choose one of the possible answers for part two. Then, by clicking on the correction button, the student may access the correct answers and comments made by the teacher. If in any case the student’s answer is wrong, the correct answer will not appear. He/she will be given a message which will help him/her make another trial. This ensures that correct answers will not be given ahead of time, forcing the student to think about his/her answers and study harder.

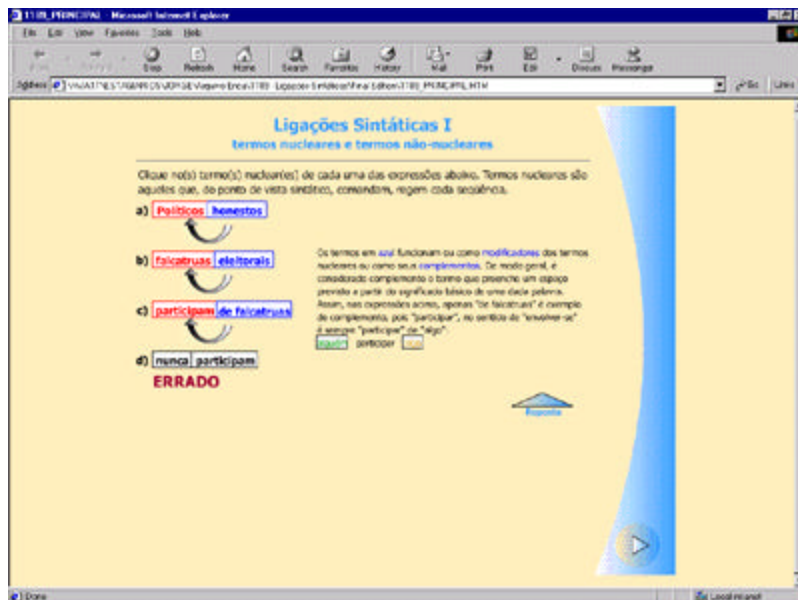


FIGURE. 4
EXERCISE AND THEORY DEMONSTRATION WEAVED TOGETHER (PART I)

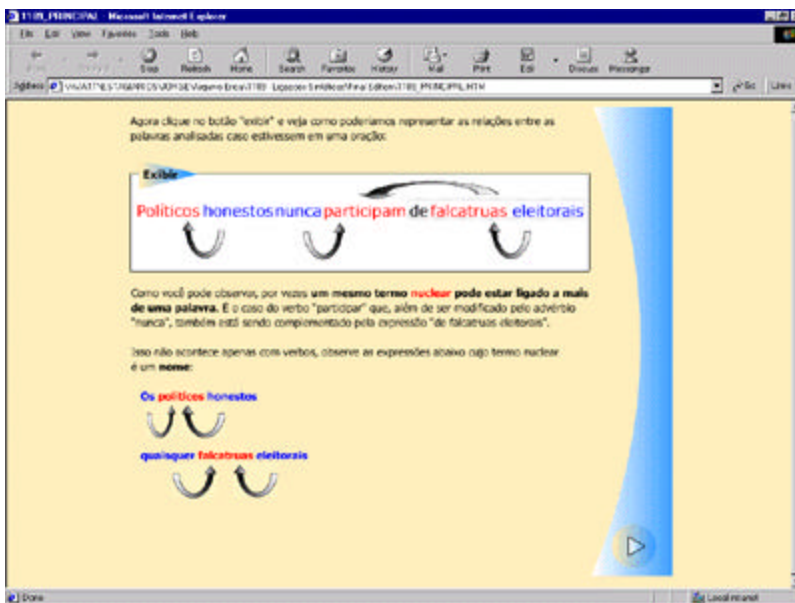


FIGURE. 5
EXERCISE AND THEORY DEMONSTRATION WEAVED TOGETHER (PART II)

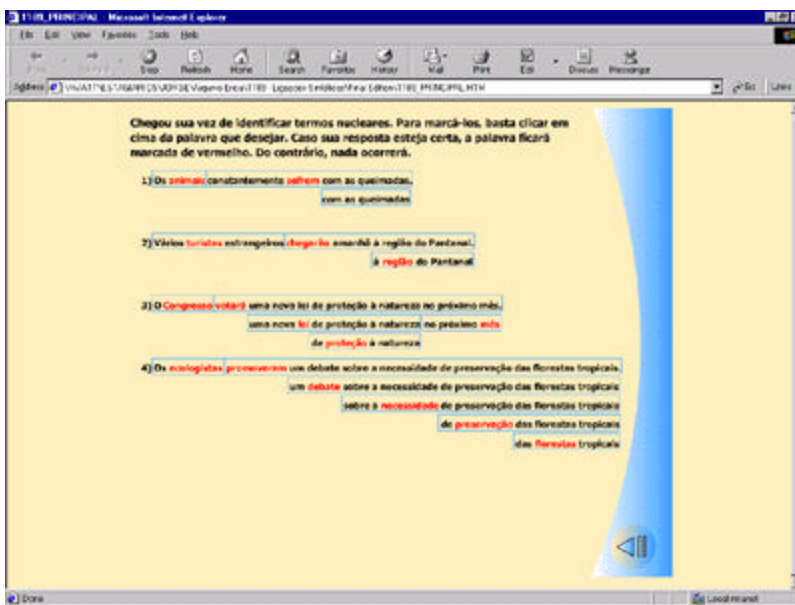


FIGURE. 6
EXERCISE AND THEORY DEMONSTRATION WEAVED TOGETHER (PART III)

Figures 4 through 6 show the possibility of creating a larger online document uniting exercises with theory demonstration making full use of interactive texts and movies. The student can then navigate through all the contents, learning theory and exercising his/her knowledge in the same study environment.